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ABSTRACT

As one phase of a research program designed for purposes of developing future youth programs and as one source from which hypotheses, relevant to the occupational and social adjustment of rural southwestern Indian youth (Navajo and Papago), were generated and later tested, this study presented a survey of literature concerned with the environment, education, personal characteristics, job training, and employment prospects of Indian youth. Literature surveyed reflected that the Papago were in a transitional state midway between reliance upon native society and acceptance of alternatives; that due to cultural differences Navajo youth experienced problems with white society work habits, finding fixed time schedules and competition sources of stress; that incidences of suicide and alcoholism among young married Navajo males had increased; that although education had not been part of the Indian value system, school enrollment had been increasing; though Indian dropout rates were still higher than the national average, they were declining; that public schools rarely reflected Indian culture; and that the Bureau of Indian Affairs had 3 programs directed at Indian occupational adjustment, as well as others established by contract with private industry, residential training centers, etc. (JC)

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A SURVEY OF THE LITERATURE RELEVANT TO INDIAN RURAL YOUTH IN THE SOUTHWESTERN STATES

Final Report of Phase I of a Research Program
performed under
Contract No. 41-2-002-27

by

William J. Schneider, Vancye Belding and Guy B. Miller

to

BUREAU OF INDIAN AFFAIRS
U. S. DEPARTMENT OF LABOR

from

NEW MEXICO STATE UNIVERSITY
Las Cruces, New Mexico 88003

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As part of the work undertaken in a study of American Indian youth in the Southwest, North Star Research staff reviewed the recent literature dealing with problems of American Indian youth. The literature is being used as one source of hypotheses about the occupational and social adjustment of Indian youth in the Southwest.

The literature that was reviewed concerned the environment, education, personal characteristics, job training and employment prospects of Indian youth today. The method has been to select topics relating to rural American Indian youth and then to present what has been written about those topics. The views expressed are those of the authors reviewed, not of the North Star staff.

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SUMMARY

Introduction

As part of the work undertaken in a study of American Indian youth in the Southwest, North Star Research staff reviewed the recent literature dealing with problems of American Indian youth. The literature is being used as one source of hypotheses about the occupational and social adjustment of Indian youth in the Southwest. These hypotheses will be tested in a later phase of the study. The views expressed in the following sections are those of the authors of the literature, not of the North Star staff.

The Context of the Study

There is no single, uniform "Indian culture". Each tribe's culture has unique characteristics that may have very real effects on the whole life pattern of those who grow up within the tribe. Since it is economically infeasible to cover all the tribes, the present study is limited to the two major tribes of Arizona and New Mexico, the Navajo and the Papago.

Most of the members of these tribes would be classified as rural nonfarm residents. They live scattered across the reservations in small towns, villages or settlements.

Part I - The Changing Environment of Indian Rural Youth

It is difficult to determine actual populations for Navajo and Papago people because the U. S. Census Bureau data represent the respondents' self-classifications, rather than any set biological definitions.

The largest tribe in the Southwest is the Navajo, the majority of whom live on or near the reservation. The tribal unity rests on a common language, a common past, a cultural heritage which is generally the

same, a territory with certain topographical unity and the fact that they constitute a single governmental administrative unit with a single elected council for the whole tribe.

Social organization is very informal; little authority is vested in the headmen. Decisions regarding community policy are reached by the consensus of a local meeting. Religious lore and practice based on witchcraft and the supernatural plays a definite part in the Navajo life style.

The lines of contact in traditional Navajo society are primarily those of kinship. The ideal of human conduct for Navajos is "to act toward everyone as though they were relatives". Generosity is praised and wealth is usually shared. The basic social and economic unit is the biological family, with descent traced through the mother. Structurally, marriage is one of the weakest social institutions among the Navajos. Extended families are common; however, white influence has tended to weaken this pattern.

Because of the orientation of their society, Navajo youth sometimes have problems with the work habits of the white society, such as working on a fixed time schedule and competing rather than sharing. The most incompatible values that often lead to stress affect principally the young males who must operate in both the new economy and the old system. The rising incidence of suicide and alcoholism in young married Navajo males appears to reflect this stress.

The Papago differ in many respects from the Navajo. The family is the basic social and economic unit; however, descent is traced through the paternal line. The villages are held together by custom and tradition, and governed by the unanimous decisions of the older men. Religion and ceremonialism are relatively unimportant.

The Papago are currently in a transitional position, midway between reliance upon the institutions of their native society and the

acceptance of alternatives provided by federal programs and by the opportunities in the surrounding non-Indian, off-reservation areas.

The traditional livelihood of both the Navajo and Papago is livestock raising and small-scale farming. The BIA encourages the location of industry on or near the reservation to create more job opportunities. Several Indians work for the BIA itself. There is some seasonal off-reservation work, and a few craftsmen earn their living by rug weaving or silversmithing.

Indians are among the most deprived people in America. Many families live in substandard, dilapidated dwellings with an insufficient understanding of "proper" hygienic practices and nutritional dietary habits. There is high unemployment; wage rates for those employed are low.

Perhaps it is their low standard of living that causes much of the Indian migration. Many Indians move back and forth between the reservation and the city. They come to the reservation for the seasonal summer employment, and migrate to the city for the winter to avoid harsh weather and poor housing conditions. The major incentive to migrate is economic: to find better jobs, higher wages, and better physical living conditions. Most migrants would prefer to live and work near their reservation home.

A study of Navajos living in Denver found that drunkenness is a major problem among Indians who are unprepared for urban living and face manifold pressures. Another study in Arizona found that the Indians worked to maintain an identity separate from that of the white community. They resisted becoming like white men by conforming to stereotypes of "Indian behavior".

Part II - Navajo and Papago Youth and Their Education

One of the principal causes of dropping out and failing in school among Indian children is said to be a difference of norms and values between the school and the home, resulting in a loss of cultural identity on the part of the student. Common differences are the Indian student's noncompetitiveness, his present-oriented concept of time and his pronounced sensitivity to any praise or criticism that sets him apart from his peers.

Indian students do not have the motivation toward education that Anglo children have. Education has not been instilled as something of value by Indian parents. However, school enrollment among Indian children has been steadily increasing.

The Indian dropout rate, although higher than the national dropout rate, has been steadily declining. The median educational level of the Navajo out-of-school population is only about five grades completed; those living on the reservation are the most poorly educated. However, over 70 percent of Navajo youth are now completing high school.

Indian students are behind the general population in educational attainment. Many students are over-age for their grade level. This may be accounted for by late school entrance, irregular attendance and the fact that many of the less-acculturated children in the BIA schools require a beginning year in which basic social and conversational skills are taught.

The proportion of Indian students attending college is low; the proportion who succeed in college is even lower. One poll indicated that practically no Indian students were interested in pursuing "traditional" occupations. The majority wanted to help their people after graduation; many planned to teach.

The basic federal subsidies for public education for Indian children come from the Johnson-O'Malley Act (JOM) and the Elementary and Secondary Education Act (ESEA). In addition, Public Law 81-815 and Public Law 81-874 provide assistance in school districts which experience increased enrollment because of the presence of children for whom the federal government has an educational responsibility.

Although finances are also supplied under other government acts, money available for Indian education usually meets only the most basic needs of the "traditional" curriculum, and is not readily available for innovative programs or ideas. The BIA has, however, instituted programs that focus on the Indians' educational problems. Project TRIBE and Rough Rock Demonstration School are two examples.

There is a shortage of educators who are qualified to teach Indian children. Few teachers of the Navajo and Papago are of Indian descent; fewer still have had special preparation for dealing with the cross-cultural problems involved in teaching American Indians. Many administrators and teachers consider Indian students inferior to white students and (often unintentionally) discourage them from trying to succeed in school.

The public schools that educate Indians rarely include course work that recognizes Indian history, culture or language; often they use curricula and approaches that are derogatory toward the Indians, are designed to prepare students to live off the reservation, and are geared toward white middle-class standards and values. The biggest problem hindering or defeating the Indian student in the Southwest is the language problem. Most teachers in Navajo schools do not know the Navajo language and do not encourage the children to communicate in Navajo. Lessons that teach language skills do not take into consideration the Indian child's unique language problems. Certain concepts in English cannot be translated directly into Navajo; they require interpretation by someone who understands both cultures as well as both languages.

Public schools enroll at least two-thirds of the Indian children in the country. Indian parents face continuing problems in dealing with the power structure. Few Indians are represented on the school boards of public or BIA schools. As proof that the Indian voice can be effective in the control of schools, however, one can point to the Rough Rock Demonstration School, the Navajo Community College, and the Ramah Experimental High School.

Part III - Preparing Indian Youth for Today's Job Market

Present Programs

The BIA's Employment Assistance Branch consists of the Relocation (Direct Employment) Program, the Adult Vocational Training Program, and the On-the-Job Training Program. The goal of these programs is to make employment opportunities available for those who wish to find jobs, even if they must leave the reservation area to do so.

The BIA has also contracted with private industries to establish residential training centers to equip the Indian with basic literacy, math and communication skills, introduce him to various vocations and give him social orientation. Such centers have the objective of bringing Indians to an entry level of employment and enabling them to function socially, emotionally and economically in any environment.

More recent programs include counseling services for Indian inmates of federal prisons, aid to large Indian families, halfway houses for Indians who are relocating away from their traditional home area, and special grants for purchasing homes. Several other programs are available to create job opportunities and economic development of Indian land. Many colleges have begun special programs for Indian students.

Suggested Programs

There are many suggestions for solving Indian problems:

1. Indians must have an effective voice in determining their own needs, formulating policies, administering funds, and controlling the management of the programs.
2. The school curriculum should be revised and a bi-cultural approach used in Indian education.
3. Special training is needed for all teachers and counselors of Indian children.
4. More adequate funding is necessary for Indian educational programs.
5. Vocational education should be an integral part of any BIA or public school system that enrolls large numbers of Indians.
6. Planning for vocational and technical education programs on regional, state and local levels should take place in cooperation with Indian people.
7. Industry should become more involved in vocational education.

INTRODUCTION

This report is part of a research study that North Star Research and Development Institute is currently conducting for the U. S. Department of Labor*. The objective of the study is to optimize the benefits of youth projects for American Indian youth living on reservations and in rural areas of the southwestern states. This study is aimed at determining the factors that are significantly related to the social and occupational adjustment of these minority group young people, both in the rural setting and when they move to other settings.

As a part of the work undertaken to attain the objectives of this research program, the North Star staff examined the literature published between 1955 and 1970 for information relating to the problems of American Indian youth in the Southwest. Major works published before 1965 were included in this search, as well as publications dealing with those nationwide Indian problems that directly affect Indian youth in the southwestern states.

The method has been to select topics relating to rural American Indian youth and then to present what has been written about those topics. The views expressed are those of the authors reviewed, not of the North Star staff.

This literature search is only a small part of the research required to delineate practical courses of action that can be taken to optimize the benefits of youth projects for rural Indian youth in the Southwest. The experts whose views we summarized in this report represent only one of several sources of information for generating hypotheses that should be tested. The hypotheses resulting from this survey

*This project is being supported by the Manpower Administration, U. S. Department of Labor. This report is in partial fulfillment of our contract with the Manpower Administration; a final report on the project will be submitted at a later date.

will be synthesized with those generated through interviews with American Indian leaders in the southwestern states, with urban employers who come in contact with youthful Indian migrants from the Southwest, and with teachers in southwestern colleges and universities who are recognized authorities on American Indian problems.

THE CONTEXT OF THE STUDY

The Tribes to be Studied

There is no single, uniform "Indian culture"; each tribe's culture has unique characteristics that may have very real effects on the whole life pattern of those who grow up within the tribe. It is not feasible, therefore, to study a "representative" sample of tribes.

The major concentrations of Indians in the Southwest are in Arizona, New Mexico and Oklahoma. Although the tribes in Arizona and New Mexico differ culturally from tribe to tribe, they do face somewhat similar environmental and economic problems. The tribes that reside in Oklahoma, however, face entirely different environmental and economic problems. Since it is economically infeasible to cover all the tribes of Arizona and New Mexico, the present study is limited to the two major tribes -- the Navajo and the Papago.

By far the largest of these tribes is the Navajo, with an estimated 140,000 members in 1971, of whom about 107,000 live on the Navajo Reservation. The Papagos -- estimated at 11,000 members, 5,500 of whom live on the reservation -- constitute the second largest tribe[7,27,45,48,60].

The Definition of Rural Indian Youth

The U. S. Census categorizes rural people as being either farm or rural nonfarm residents. The "farm" population consists of people living in rural territory on places of 10 acres or more from which yearly farm product sales amount to $50 or more, or on places of less than 10 acres if farm product sales are $250 or more. All other residents, in towns of 2,500 or less, are "rural nonfarm"[61].

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On the basis of this definition, most Navajo and Papago Indians living in Arizona and New Mexico would be classified as rural nonfarm residents. "Cash crop" or commercial farming is not extensive in either tribe. The number of Navajo families with cash income from farming declined so steadily that by 1956 such figures were no longer available. Flood-water farming*, basically a subsistence type of agriculture, has historically been the most common form of Papago agricultural activity; but the use of this form of agriculture is also declining. A survey taken in the southern part of the main Papago reservation showed that of 4,466 acres available for flood-water farming, only 536 acres were being used(43,44).

Most of the Navajo and Papago residents live scattered across the reservations in small towns, villages, or settlements. Sells, with a population of 650, is the largest such center on the Papago reservation; and Page, with a population of 1,500, is the largist on the Navajo Reservation(43,80).

*Flood-water farming consists of small garden plots on which vegetables such as corn and beans are raised. These gardens depend upon run-off water from washes during the rainy season for moisture(43).

PART I -- THE CHANGING ENVIRONMENT OF INDIAN RURAL YOUTH

Population Trends

Several factors make it difficult to determine accurate population counts for Navajo and Papago Indians. U. S. Census Bureau data on Indians represent respondents' self-classifications rather than any specific definitions of biological stock; and furthermore, these data are not broken down according to tribal origin[78,79,80,81,82]. Bureau of Indian Affairs (BIA) figures are usually obtained from tribal or agency rolls. In many cases, particularly in more isolated areas, births are not reported and deceased persons may not be removed from census rolls. Most figures, therefore, must be considered as estimates rather than as factual data[5,7].

The 1970 census reports that there are 168,600 Indians in Arizona and New Mexico. In both Arizona and New Mexico approximately 81 percent of the Indian population is rural. This figure marks a recent change in the rural population; 1960 data indicated that 90 percent of the Arizona Indians and 84 percent of the New Mexico Indians lived in rural areas. These figures do not indicate how many of these rural Indians live on reservations[78,79,80,81].

The largest tribe in the Southwest is the Navajo. Recent sources [1970 and 1971 publications] estimate the total number of Navajos to be 140,000; anywhere from 107,000 to 126,000 people are said to be living either on the reservation itself or in areas close to it in which Navajos are the majority and are living the traditional life style[45,48]. The current Navajo birth rate is 41.5 per 1000 population; 21.2 births per 1000 population is the ratio for the U.S. as a whole. The annual rate of population increase is estimated at 2.5 to 3 percent. Sixty-seven percent of the reservation population is said to be under 20 years of age. The on-reservation population over 14 years old (not including students) is 54.3 percent female, and there are also more women than men in the younger age groups[7,18,48].

The population density on the reservation is 3 people per square mile. There are no large urban centers within the boundaries of the reservation, and most of the widely scattered population lives in areas that are lacking electricity or other utilities. The only sizable concentrations of people are found in the administrative centers of Shiprock, New Mexico; and of Tuba City, Kayenta, Window Rock, and Fort Defiance, Arizona[7,26].

The Papago Indian tribe, the second largest tribe in the Southwest, is said to number 11,000[60]. The reservation population has remained relatively constant since the early 1900's; in 1914 it was 5,313, in 1959 it was 4,166, and it now [1970] numbers 5,506[27,43]. The population increases at a rate of 2 percent per year, but Papago Indians are moving off the reservation at a rate equal to or exceeding the rate of natural increase.

The median age of the total Papago population is between 19 and 20; 59 percent of the population are under 25 years of age. The on-reservation population tends to be older.

The population of the Papago reservation is relatively small in relation to the area it occupies; it is scattered over the entire reservation in settlements or villages. There are currently 74 inhabited settlements on the reservation, nine of which are considered "major" villages with populations of more than 100[27]. The San Xavier reservation is situated on the east and north boundaries by dense suburban development as a result of Tucson's expansion. Phoenix and the Salt River Valley, the most densely populated sections of the state, lie between 40 and 50 miles to the north[43,48,60].

Social and Cultural Environment

Navajo Culture

Culture has been defined as any given people's way of life, as distinct from the life-ways of other people. Any culture consists of the set of habitual and traditional ways of thinking, feeling and reacting that are characteristic of the ways a particular society meets its problems at a particular point in time[44].

Prior to 1863 the largest unit of effective social cooperation was a band of Indians who occupied a defined territory and acknowledged the leadership of a single headman. Each local band acted without much reference to other, similar units. Kluckhohn[44] states that whatever tribal feeling the Navajo have today rests upon a common language, a common name, a cultural heritage which is in general the same, a territory with certain topographical unity, and the fact that they constitute a single governmental administrative unit with a single elected council for the whole tribe.

The lines of contact in traditional Navajo society are primarily those of kinship. The basic social and economic unit is the biological family, consisting of husband, wife and unmarried children, with descent traced through the mother. The prevailing pattern of residence is matrilocal. Extended families, consisting of an older woman, her husband, unmarried children, married daughters and their husbands, are common. However, white influence has led to an increasing incidence of residence with the husband's family, and many couples do not live with either set of relatives.

The "outfit" is a group of relatives that is larger than the extended family. It may consist of two or more extended families or of one or more extended families linked with one or more biological families, who regularly cooperate for certain purposes, such as planting, harvesting, or ceremonial occasions. Structurally, marriage is one of the weakest social institutions among the Navajo. Only one-third of the females and

one-fourth of the males go through life with the same spouse. Frequently the demands of the man's family of orientation (mother) and his family of procreation (wife) are conflicting, and this is a deep source of strain in the Navajo social organization. According to Kluckhohn, intratribal friction is probably one important reason why Navajos do not cooperate very long in group projects(44,46).

The basis of Navajo social organization is very informal. The headmen have no real political authority, and decisions regarding community policy can be reached only by the consensus of a local meeting. At ceremonial occasions it is the medicine man who gives directions(44).

Local governmental units of the Navajo tribe are called chapters. There are 101 active chapters with a president, vice president, secretary and grazing committeeman, each elected to a 4-year term. Duties of the chapter include dealing with property or family disputes, and allotting land and grazing permits. The representative body is the Navajo tribal council, consisting of elected members from all parts of the reservation(7,44).

The great body of religious lore and practice plays a definite part in the life style of the Navajo today, according to Kluckhohn(44). All physical ailments are considered to be of a supernatural origin, and locating the cause of a disease in physiological processes is foreign to Navajo thought. The cause is assumed to be either some violation on the part of the individual or witchcraft. Myth and ritual tend to carry forward ancient Navajo tradition and serve as a significant brake upon the speed of cultural change. The people symbolically affirm their resistance to white man's efforts to change their way of life by giving even more importance to their own ceremonials. Witchcraft functions in two principal ways: it helps maintain a system of checks and balances so that ceremonial practitioners and the rich are kept from straining too much power; and it is an implied threat against all socially disrupting action(44).

The ideal of human conduct for Navajos is "to act toward everybody as if they were relatives". Generosity is praised and stinginess despised. One must do one's part in the system of reciprocal rights and obligations, notably those which prevail between kinfolk. The major threat which restrains the potential social offender is withdrawal of the support and goodwill of his neighbors[44].

Although possessions are valued for the security they provide, wealth is usually shared by the whole extended family and outfit. Making the attainment of riches the chief aim in life is a practice that is universally condemned by the tribe. There is social pressure to support and share with relatives. The only property that is individually owned consists of clothing, ornaments, saddles, and ceremonial equipment. Water resources and timber areas belong to all the people. Farm and range land "belongs" to a family and is usually inherited through the mother[44].

Work habits of the white society, such as working on a fixed time schedule and competing rather than sharing, are not part of the orientation that Indian youth acquire from their own society. Employers indicate that Indians are reluctant to avail themselves of promotional opportunities because of cultural values that make them noncompetitive in an industrial or school situation[42,44,72].

When the traits of another culture are learned superficially without any acceptance of the underlying values and premises of that culture, the learners cannot be expected to function comfortably[28]. The most incompatible values, often leading to stress, are felt principally by the young male who must operate both in the new economy and the old system. The rising incidence of suicide and alcoholism in young, married Navajo males appears to reflect this stress[28,44,46].

Papago Culture

Culturally the Papago are related to the desert tribes of New Mexico, western Arizona, southern California and Nevada. As is the case with the Navajo, the family is the basic social and economic unit, and each family is responsible for its own subsistence. Descent, however, is traced through the paternal line. Extended families, consisting of parents, their children, and the wives and children of their married sons, are commonly grouped into small autonomous villages. These politically autonomous villages are the social unit that is next in importance to the extended family[43].

The culture is characterized by loose political organization, with little authority vested in the chief or headman. Leadership is attained more through personal influence than from vested authority. The villages are held together by custom and tradition and governed by the unanimous decisions of the older men. The individual has a high degree of freedom coupled with full responsibility for the protection, livelihood and well-being of the members of his own family.

The Papago have a highly developed native literature; however, religion and ceremonialism are relatively unimportant. Religious practices center around the recurring events of the annual economic cycle, interspersed by many curing and other personal crisis ceremonies[43].

The life-cycle is relaxed and unhurried. There is a dependence upon established tradition and on the old people who understand this tradition, rather than upon individual initiative. The absence of individual competitiveness, the ease of manner, and the lack of fully developed interest in economic advancement persist as cultural traits. These account, in some measure, for the people's resistance to measures and proposals stemming from the white man's concept of progress and his interest in wealth as a symbol of status and achievement[43].

Present-day trends in residence, age composition, and origin disclose movement away from native institutions of Papago society, and indicate that the Papago are currently in a transitional position. They seem to be midway between reliance upon the institutions of their native society and the acceptance of alternatives provided by federal programs and by the opportunities in the surrounding non-Indian, off-reservation areas(43).

Economic Environment

Sources of Livelihood - Navajo

The traditional Navajo livelihood is stockraising and small-scale farming. Livestock (principally sheep) grazing and subsistence farming continue as economic activities. The tribe has established a policy of encouraging the development of large-scale commercial agriculture, particularly in the areas of Shiprock, Chinle, Ganado and Tuba City, where soil conditions and water supply permit intensified farming(7,44).

The Navajo tribe and the BIA have made efforts to attract industry to the reservation by offering long-term land leases, water rights, a large labor pool, electricity and gas, and funds for training programs and for industrial construction(7). (See section entitled "Industrial Development Programs".)

Many mineral resources are leased to white operators and provide a source of unearned income as well as some wage work. The Navajo sawmill is a valuable source of income, both in terms of product sales and in terms of wages paid to employees, most of whom are Navajo. Navajo Forest Products Industries and the Navajo Utility Authority are the only significant tribally owned enterprises; they provide a total of about 600 jobs(44,45).

Navajos are on the government payroll as interpreters, teachers, road and irrigation employees, maintenance workers, etc. Many Navajos are employed in BIA and tribal administration offices. Other wage work comes from teachers and missionaries who employ Navajos as interpreters,

guides and handymen, and from some wealthy Navajos who employ tribesmen during the shearing and harvesting seasons. Some Navajos earn fees for performing tribal ceremonial rites[7,44].

Off-reservation work is available from ranchers (seasonal), the railroad, mines, and commercial farms. A few craftsmen can earn their living by rug weaving and silversmithing, but for the most part this is a supplemental form of livelihood[7,44].

Sources of Livelihood - Papago

Cattle raising has been and still is important to the Papago, not merely as an economic enterprise but because -- like the Navajo and their sheep -- a way of life has been developed, which becomes relatively meaningless without the livestock and the work of caring for animals on the open range in isolated desert areas. Most of the reservation is now used for rangeland. All cattle are owned by individual Indians and families except for a small tribal herd of registered Hereford cattle which is under professional management. The cattle are not sold until other sources of income are exhausted; then only enough are marketed to meet the cash need of the family until other sources of income again become available[27,43,70].

Papago agriculture has never lived up to its promise. In 1949 when 2,425 acres were being farmed, the BIA suggested that an additional 16,000 acres could be irrigated and developed into farm land. In 1962, however, less land was being used for farming than in 1949. Flood-water farming persists, but has been declining, and its chief function is to provide subsistence[43].

Large-scale farming and rapid farm growth are creating a zone of intensive commercial activity close to the northeastern boundary of the reservation. The San Xavier Reservation is abutted by dense suburban development and growing industrial activity as a result of Tucson's expansion. Employment other than farming or ranching is scarce on the Papago reservation, however, and most Papagos are not skilled enough for off-reservation employment, although some wage work is available from commercial farms and mines. Two large mining companies have each discovered significant deposits of high grade copper ore in the northern part of the

reservation and are now preparing for full mining operations there. A third mining company will soon begin copper mining operations at San Xavier near Tucson. Training for this kind of employment has begun, and several hundred individuals will eventually be hired as regular full-time workers receiving full-scale wages[37]. Many Papago Indians are multi-employed in stockraising, small-scale farming on the reservation, and unskilled agricultural or nonagricultural work off the reservation[43,76].

Income and Standard of Living

Not only is level of unemployment on the reservations very high, but wage rates for the few available jobs are low. There are few unions, and fringe benefits (such as life and medical insurance) are almost non-existent[71]. The average family income for both Navajos and Papagos has been estimated at about $2,300 per year[38,47].

Indians, as a group, are among the most deprived people in America in terms of housing, health, employment and income[18]. Many families liv in substandard, dilapidated dwellings that lack adequate sanitation facili ties and safe water supplies. According to Johnson[42], many Indians have an insufficient understanding of "proper hygienic practices" and suffer fr dietary deficiencies.

Employment Status

In 1967, the Arizona State Employment Service conducted a reservation-wide sample survey on the Navajo Reservation. Of the total Navajo on-reservation population 14 years of age and older (not counting students 82 percent were counted within the labor force[48]. At the time of the survey, 37 percent of those defined as being in the labor force were actually were surveyed as self-employed. The employment rate was slightly high for men than for women, and was extremely low among teenagers. Nearly 63 percent of those persons who were 16 years old or over and not full-time

students reported themselves to be without jobs but willing to accept "suitable" employment. Because of the deviation from the normal definition of "unemployment", this group was termed the "nonemployed". Two-thirds of the Navajo nonemployed were between the ages of 20 and 44, with the largest percentage in the 20 to 24 year age group[48].

Unemployment on the Papago reservation is said to be three times that of the rest of Arizona. The average Papago male 14 years of age and over is employed barely more than half the time. Farm work accounts for more of his time than any other type of employment. The male labor force increases in the summer months -- 17 percent more are employed in July than in December. Sixty-nine percent of those who are employed work off the reservation, 18 percent work on the reservation, and 13 percent work both on and off the reservation. The male labor force reaches a peak in the 30 to 39 age group, declining after age 40. Women most often withdraw from the labor force between the ages of 30 and 39[43,60,77].

Industrial Development Programs

The BIA Industrial Development Branch encourages the location of industries on or near the reservation to provide job opportunities for those who do not want to leave the reservation area. The Economic Development Act (EDA) of 1965 made funds available for this purpose. Since then, several State-chartered, nonprofit organizations have been set up to develop Indian lands and thus offer attractive plant sites to interested industries and businessmen. Grants of up to 50 percent for the costs of water, sewage disposal, and community building projects, and public works loans for up to 40 years are available from EDA to overcome the lack of social overhead capital that is a major barrier to industrial development. EDA also makes loans of up to 65 percent of the cost of land, buildings, machinery and equipment[48,71].

The Indian tribes themselves provide assistance to potential manufacturers. In 1966, Indian tribes invested $38,000,000 of their own funds in economic development projects, including $12,000,000 in reservation

industry. Sorkin[71] comments that millions have been invested in public works projects of doubtful necessity; other funds have been invested in tribal enterprises with low rates of return because without these expenditures there would be no jobs on some parts of the reservation.

The Small Business Administration (SBA) makes loans to Indians in Arizona, most of them for on-reservation enterprises. In 1970, the SBA had made 26 small business loans in Arizona amounting to over $400,000 and providing employment for 78 Indians[48]. According to a recent article published in the Wall Street Journal, however, there are few commercial facilities on the reservation, and most of those are operated by whites, although Navajo people do find some employment in them[45].

Migration

Migration Trends

Most information on Indian migration trends is of a general nature. There are no breakdowns showing specific patterns for the individual tribes. Hodge[37] indicates that from 1952 to 1963 about 30,000 Indian workers moved to cities under the BIA relocation program, and 60 percent of these found permanent employment in urban areas. BIA efforts to resettle Navajos off the reservation have been mildly successful; according to Ashe[7], the rate of return from 1952 to 1960 was about 35 percent.

In 1960 the U. S. Census estimated that 30 percent of all Indians were urban residents; in 1968 that figure was estimated to be 36 percent[8]. Not all Indians migrate to large cities. There are a number of small cities near the reservations that contain industries and thus job opportunities -- for example, Farmington and Gallup, New Mexico; however, no information is available in the literature as to the extent or success of this type of migration[6,37].

The largest urban Indian population (70,000) is in California: Los Angeles County has 45,000; the San Bernadino-Riverside area has 4,000. About 30,000 are estimated to live in Oklahoma: Oklahoma City has around 12,000; Tulsa about 10,000. The urban Indian population of Arizona is over 15,000; most live in Phoenix (10,000) and Tulsa (2,500)[8].

The city of Los Angeles has the largest Indian population of any city in the United States. Of a sample of 2,945 Los Angeles Indians, 417 (or 14.2 percent) were Navajo, and 74 (3 percent) were Papago. The BIA office in Los Angeles has in recent years been assisting about 1,300 Indian migrants annually[8,63].

Factors that Influence Migration

Aurbach[8] states that there is tremendous flux back and forth between the city and the reservation. During peak hunting and fishing periods, and during the time that summer agricultural employment is available, many Indians return to rural areas. During the winter months many move to cities to avoid harsh weather and inadequate housing conditions. When employment opportunities decline or job layoffs occur in cities many return to their native communities. In his study of Navajo migrants to Denver, Colorado, Graves[32] found that 50 percent of the migrants remained in the city less than six months; many urban migrants are liable to slip into a cycle of urban migration followed by return to the reservation.

The major incentive for migration is economic: to find better jobs, higher wages, and improved physical living conditions[32,37,63]. Graves[33] found that the Navajo migrants to Denver perceived the city as providing a favorable context for the attainment of economic material goals, while they perceived the economic opportunities on the reservation as limited.

A study[47] of Indian high school seniors' attitudes toward migration found that when there is any economic advantage to moving, relatively few respondents would remain in their present communities. Forty-four percent of the sample said that, if they were to leave the reservation, their decisions about where to go would be influenced by where their friends and

relatives had gone. Of those Hindocs who were Navajo, 77 percent expected to be living off the reservation in five years; most of them said they would prefer to be in a large city. Although many viewed the city as more attractive economically, a relatively small but stable number of respondents were attached to the reservation at whatever the cost with regard to opportunity.

The major positive features of the reservation seem to be the emotional support of Indian friends and relatives, the traditional life style, the opportunity to carry out traditional behavioral roles as Indians, and the pleasure derived from engaging in the traditional economic activities of farming and herding[33,36,37]. Hodge[37], in his study of Albuquerque Navajos, found that although some had rejected the traditional life style, few went to live permanently in Albuquerque. He concluded that urban residence probably cannot provide them with a life style they regard as desirable.

Only the substantial economic advantages of life in the city keep migrants there. Other strongly held values are continually pulling most Navajos back to the reservation. Any change in a migrant's economic status (that is, a set-back in the city or the promise of a good job on the reservation) is apt to lead to his return home[33].

Adjustment of the Indian Migrant

Graves[32], in his study of Navajo migrants to Denver, concluded that migration to an urban area is not the way to solve the economic limitations of reservation life. Most migrants would prefer to live and work near their reservation homes. Forcing them to seek employment in large urban centers only adds to their adjustment problems. The pursuit of one set of goals (economic-material) through urban migration leads to inadequate satisfaction of another set of goals (social-traditional) that are often equally strong. Also, most Indian migrants are inadequately prepared for urban residence, both educationally and socially. The migrant has limitations of language, race and culture. Only 14 percent of the Navajo migrants to Denver had 11 years or more of schooling, and only 6 percent were able to

obtain skilled jobs. Graves concluded that it would be advisable to encourage migrants with poor qualifications to first take advantage of BIA sponsored basic educational and vocational training before embarking on direct employment assistance[32].

Drunkenness is a major problem of Denver Navajos; Indian arrests for drunkenness are ten times those of whites and four times those of other minorities. (Graves believes, however, that most Navajo drunkenness can be accounted for by reasons other than just saying that the subjects are Indians.) When the Indian migrant is unsuccessful in adapting to his new environment he may use drunkenness to provide "substitute rewards"; those who are better prepared for urban living have fewer drinking problems than the less well-prepared Indians. Indians who are unprepared for urban living face manifold pressures; they drink to escape the frustrations and problems generated by their marginal socioeconomic position. A pattern of drinking to oblivion is established and continues to be reinforced[32].

Western education has taught the Indian to value material goals; but limited opportunity on the reservation and his lack of occupational skills prevent him from attaining these goals. What the migrant needs, according to Graves[32], is not more psychological counseling or more wholesome recreational outlets, but better jobs. Any limitation in his personality or cultural repertoire for coping with his adjustment difficulties becomes irrelevant if the economic bases for these difficulties can be dealt with. Unless substantial changes occur in Navajo values, urban migration may not be the most effective way of coping with limited resources. A more stable adjustment to the demands of the modern world could probably be effected if greater economic opportunities were provided the Navajo on or near their reservation homes[32,33].

Hodge[37] determined, from his study of Albuquerque Navajos, that those Indians who are able to earn a living in the city are generally young adults who are in reasonably good health, and who have acquired a marketable skill or are able to acquire one in a short time. This type

of individual is likely to come from a "transitional" reservation community -- that is, a community near good roads, where there are more resources and jobs available and where the life-style is more similar to off-reservation communities than would be the case in a geographically isolated area where herding and marginal agriculture offer the only way to make a living.

Padfield[80] found that the social and psychological costs of mobility are not commensurate with the rewards, according to Papago informants; the extremely low income levels of Papago youths -- the mean is $2,460 per year -- who are better educated and live off the reservations, tend to support this.

Waddell[82] found that, rather than aiding in adjustment, such things as partial assimilation of Anglo values, partial education, and partial vocational training experience may only intensify the pattern of ambivalence and status inferiority among Papagos. The Indian's cultural identity and his strong ties to reservation kinsmen, villages, and customs tend to restrict complete assimilation of Anglo culture and enhance Papago cultural identity. Waddell believes that this cultural identity is maintained by employers who have a patronizing attitude toward the supposed "Indian way of life" and make excuses for certain behavior -- such as absenteeism and drinking sprees -- that they would not tolerate in their non-Indian employees[83].

Waddell[84] also studied the Papago Indian community in Coppertown, Arizona, where the main industry is a large open pit copper mine. The ultimate goal of the company was to "upgrade and improve" the Indians' status so that their patterns of behavior would not be too inconsistent with company expectations. Company administrators felt, however, that dealing with "moderns" who were also "traditionals" called for a degree of condescending patronage until the Indians could become "modern" in their behavior. Within this Indian community an Indian leadership emerged that began to participate in union activity and urge more "equal" treatment of Indians. As the mine rose, they worked to maintain the separate identity of the Indian community and to retain strong identification with their

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reservation communities. They have resisted the efforts of company leaders to help them be like white men.

Absenteeism, drinking, lack of participation in affairs of the larger community, refusals to participate in union activities, and the rejection of offered promotions appear to be, in part, efforts at maintaining Indian identity by conforming to institutionalized stereotypes. The socially and economically deprived may thus be provided structural support for behaving in ways consistent with patronage[83].

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PART II -- NAVAJO AND PAPAGO YOUTH AND THEIR EDUCATION

Characteristics of Indian Youth

Values and Attitudes

One of the principal causes of dropping out or failing in school among Indian children is said to be a difference of norms and values between the school and the home; this cultural conflict results in a loss of any cultural identity on the part of the student[18]. Cultural differences commonly cited in the literature are the Indian student's noncompetitiveness, his present-oriented concept of time, and his sensitivity to any praise or criticism that sets him apart from his peers[12,18].

Sixty-three percent of the teachers interviewed in Bayne's study[12] mentioned noncompetitiveness as one of the most obvious differences between Navajo and white children; in sports, for example, Navajo children consistently help one another rather than compete. The teachers also mentioned that the Navajo's present rather than future time orientation presents unique problems in the classroom. If no immediate satisfaction is derived from an activity, Navajo children simply give up rather than try again for some presumed future benefit. Because social control in Navajo culture is based on shaming rather than on the development of internalized guilt, Navajos are sensitive to gossip and ridicule. Any behavior that deviates from the Navajo norm is subject to ridicule; as a result, children may fear to make top grades as well as gross mistakes in class[12].

Bayne also found that Indian students do not have the motivation toward formal education that Anglo children have[12]. Very few parents of this generation of Navajo school children have had more than a few years of schooling themselves, and education has made little difference in their lives as farmers and herdsmen. They are not easily convinced of its value for their children beyond the learning of English for practical dealings with the traders and government personnel. Furthermore, the educated

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Navajo faces a complex problem in dealing with his own people. Many graduates of government boarding schools come back to their people ignorant and disdainful of traditional Navajo culture. They are unable and unwilling to live as their parents did. The result is that the "educated misfits are ridiculed and ostracized for trying to be like white men"[42].

Level of Scholastic Performance

Enrollment. A total of 185,587 Indian children from 5 to 18 years of age were enrolled in federal, private, public and mission schools in 1970. Over half of all school-age Indian children attended public schools (61.7 percent). The BIA had direct responsibility for 56,238 children in federal schools and dormitories and partial responsibility for two-thirds of those in public schools in 1970. In fiscal year 1970 the BIA entered into contracts with 15 states and with school districts in 8 other states[73]. The number of Indian students in mission schools was said to be 9,000 in 1968, and that number is steadily declining[8].

Over the six-year period from 1959 through 1965, school enrollment among Navajos increased 38 percent, from 29,000 to nearly 40,000. Public school enrollment of Navajo children during this period increased 61.7 percent, from 10,137 to 16,393. BIA school enrollment increased 23 percent, from 16,003 to 19,706. Mission School enrollment remained about the same, increasing from 1,267 to 1,292. A study of ten public school systems showed the number of Navajo high school seniors increased by 49.3 percent from 1960 to 1965[7].

Statistics published by the BIA[74] for 1970 indicate that there were 85,000 Navajo children between the ages of 5-18; 53,000 of them in Arizona and New Mexico. Approximately 21,000 of the children living in Arizona and New Mexico were in federal schools; 23,000 were in public schools; 1,000 were in other types of schools; and 6,000 were not enrolled in any school. Estimates for the 1971-72 school year indicate that 90 percent of the eligible school-age Navajo children are now in school, as compared with only about 50 percent twenty years ago[22,56].

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In 1971, about 1,300 Navajo students were in college; most were on tribal scholarships but many had BIA grants[22,56].

Fairfield[59] found, in his 1966 study of the 7,600 Pima-Papago school-age children between the ages of 6 and 18, that only 7 percent were not in school. However, when only the high school-age population was considered, 15 percent neither were enrolled in nor had completed high school. The latest report issued by the Papago Education Department[53] indicated that during the 1971-72 school year, 1,176 elementary students were enrolled in BIA, public, and mission schools. There were 632 high school students; the majority (416) attended off-reservation schools.

During the past eight years, college enrollment has increased tremendously. In 1965 only four Papago students were enrolled in college; in the 1971-72 school year, 191 were attending various colleges and universities[53].

Educational Level Attained. According to one study[48], the median education level of the Navajo out-of-school population is approximately five grades completed. The total out-of-school population is said to be approximately 40,000; of those about 20,300 are said to have completed five years of school or less. Nine percent of the out-of-school population have completed twelve grades and two percent have some post-high school training or education.

Ashe[7] found that in 1965 there were 41 Navajo college graduates with B.A. degrees; 23 of them were education majors. An additional 40 had completed two-year post-high school vocational programs. Over 70 percent of the Navajo youth who enter school are now completing secondary school[48]. In 1970 there were 443 Navajo high school graduates from BIA schools, and 1,033 who completed the 8th grade[73].

The mean years of schooling for Papago Indians is 6.8. Thirty-two percent of the on-reservation population, but only 26 percent of all Papago Indians, are functionally illiterate; this indicates that the on-reservation

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populating is the least educated segment of a poorly educated population[60]. Of those Indians 19 years of age and over who reside on one of the three Papago reservations, 34 percent have less than a 4th grade education, 39 percent have a 5th to 8th grade education, and 28 percent have one or more years of high school. Less than one percent have formal vocational training[43].

Dropouts. In 1959 the BIA estimated that the Indian dropout rate in both federal and public schools was about 60 percent, compared with a national dropout rate of 37 percent[18]. The 1967 dropout figures for Indian high school students are substantially lower than the 1959 BIA estimate and, according to a 1971 report, the dropout rate is continuing to decline.

Owens and Ross[58] found that in 1967 the overall dropout rate for Indian students in the southwestern states was 38.7 percent; the comparable national dropout rate at the time was slightly more than 26 percent. For Navajo students the dropout rate was 28.6 percent; for Papago students it was 33.3 percent. Nearly 12 percent of these persons dropped out between the 8th and 9th grades[8,18].

A 1971 BIA study indicates that the dropout rate among Navajo high school students is actually lower than that among the general population. A study made by the Southwestern Regional Laboratory in Albuquerque showed that for grades 9 through 12 the Navajo dropout rate was 20.5 percent compared to the national average of 22.7 percent[56].

One study reported a high correlation between dropping out and poverty. Murray and Rosalie Wax[18], in a study of Indian dropouts at the secondary level, reported that a large proportion of the families of dropouts were extremely poor, even by "country" Indian standards, and that children from such homes have almost no chance of finishing high school.

Measures of Intelligence. Coombs contends that most tests which purport to measure intelligence are not valid in a cross-cultural situation[18]. He quotes Montoya who stated at the outset of a program to

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identify mentally retarded children on the Navajo reservation that:

> "Most of the children in school are educationally retarded due to cultural, social and linguistic factors. The particular problem is to establish identification and selection of criteria by which an interdisciplinary staff is able to select out of this total population those youngsters who, in addition to academic and social retardation, also demonstrate evidence of having inadequate intelligence to the degree that they are significantly impaired in their ability to adapt to the demands of society."(18)

The appropriateness of such group tests as the Iowa Tests of Educational Development and the Differential Aptitude Test is diminished in a cross-cultural situation(18).

These kinds of tests measure verbal and abstract reasoning that are both functionally related to English language usage. They are designed for English-speaking students, and thus it is natural that the scores of Navajo and Papago youth, for whom English is a second language, would be lower than those of white youth(57).

School Achievement. Several authors note that a high percentage of Indian school children are over-age in their grade. According to a status report issued by the BIA Papago Education Department, at least a two-year age-grade retardation is indicated for students currently in school(53). Achievement levels are two to three years below those of white students, and Indian students fall progressively behind the longer they stay in school(18,39,42). Over-age pupils do not achieve as much in basic skills (spelling, arithmetic, reading and language use) and have a higher dropout rate than of-age or under-age pupils(8,18,29).

Coombs(10) reports on a study by Murray L. Wax in which Wax found that half of the Indian students he studied were over-age in the first grade; by the 6th grade this proportion had increased to 75 percent. Of students in federal schools in grades 9 through 12, 29 percent are one year above the expected age for those grades. Coombs reported that Indian pupils in federal schools are, on the average, slightly more than one year

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older than white pupils in the same grade. Both Wax and Coombs indicate that students in public and mission schools do not tend to be over-age.

The tendency to be over-age in BIA schools may be accounted for by late school entrance and by irregular attendance. In addition, many less acculturated children in the BIA schools require a beginning year in which basic and social and conversational skills are taught[18].

Plans and Aspirations

A poll taken by Erickson[26] at the Rough Rock Demonstration school revealed that practically no students were interested in pursuing "traditional" Navajo occupations. Another survey of 281 Navajo college students from 56 colleges indicated, however, that 94 percent wanted to help the Navajo people after graduation; about 25 percent were preparing to teach[7].

According to a study made by Bass[9], the higher the level of parental schooling, the more likely that the graduate continued his education. An analysis of Navajo high school graduates who were not in college revealed that over half had entered college but only one-fourth stayed in school to complete the program they entered. Reasons given for dropping out included lack of finances, marriage, illness, and military service. Those who did not enter college at all gave these reasons: lack of money (75 percent), working (23 percent), academically inadequate (10 percent), marriage (8 percent). Ninety-one percent of the high school graduates felt they needed more education or training for their desired vocation[7].

Post-High School Adjustment and Activities

A study of Indian college students in Arizona, Colorado, New Mexico, and Utah showed evidence that the proportion of Indian students succeeding in college was even lower than the proportion attending. During the period from September 1952 through January 1962 some 416 Indian in-school students were identified, but 237 dropouts were also identified. Of 402 students for whom grade point averages were available, only 26 had a grade average of 2.7 or higher (B+); 35 percent had less than a "C" average (<2.0)[16].

Ross[9] studied 85 Indian high school graduates in the Southwest. Fifty-one percent of all students in the study went on to complete either a vocational-technical program (44 percent) or to graduate from college (7 percent). Another 24 percent enrolled in but did not complete post-high school programs.

Of 142 Navajo high school graduates in this same study, 75 percent had enrolled in some type of formal post-high school education or training program. At the time they were interviewed, more than 6 years after graduation from high school, slightly more than 50 percent of the interviewees were living on a reservation; more continuers than noncontinuers lived off reservation[9,18].

Ross also found that three-fourths of the males and two-thirds of the females were employed. Of the employed women who had continued their education beyond high school, the greatest number were in clerical positions, with professional and service occupations next in frequency. Of the women who had not continued beyond high school, the largest number were employed in service occupations. Of the men who had continued, the largest number were craftsmen and foremen, with professional occupations ranking next. Of the male noncontinuers, most were employed in service jobs or as laborers. About 12.5 percent of the sample were in professional positions, but there was only one graduate engineer and there were no doctors or lawyers. Most of those classified as professionals were teachers[9]

The Reservation Educational System

Types of Schools

On the Navajo Reservation, educational facilities are provided by public, parochial, and federal schools. All facilities on the Navajo Reservation include 18 day schools, 8 textile schools, 43 on- and off-reservation boarding schools, 2 reservation and 7 border-town dormitory operations for children who attend public schools[7,22]. In addition, the BIA, the U. S. Office of Education, and private foundations provide financial support

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for two new, locally controlled schools -- the Rough Rock Demonstration School and the Rough Experimental School. These schools are contracted to the tribal organization and are controlled by local Indian community groups[26].

On the Papago Reservation, the Sells public school offers elementary and secondary education. The federal government (BIA) provides elementary education at day schools in three isolated villages and a boarding-day school near Santa Rosa village. Four parochial schools are maintained by the Franciscan Order. High school education is also available at federal Indian schools throughout the country. Some students attend high school in Tucson or Catholic high schools, such as St. Johns at Laveen, Arizona. Adult education classes are conducted in several villages through the cooperative efforts of the tribal government, the Office of Economic Opportunity, and the BIA[27].

Educational Funding

The basic federal subsidies for public education of Indian children come from the Johnson-O'Malley Act, and the Elementary and Secondary Education Act which includes those Indian children who are covered by the impacted aid formulas under Public Laws 81-815 and 81-874.

The Johnson-O'Malley Act (JOM), April 16, 1934, authorized the Secretary of the Interior to contract with states or territories for the education, medical attention, agricultural assistance and social welfare of Indians in the state. Its present, Amended form expanded the contracting authority of the Secretary of the Interior, giving authorization to contract with state universities, colleges, and schools; or with any appropriate state or private corporation, agency or institution. The intent of the Act was to "arrange for the handling of certain Indian problems with those states in which the Indian tribal life is largely broken up and in which the Indians are to a considerable extent mixed with the general population". The BIA's interpretation of the Act, however, is

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House Report 864, March 2, 1934, and Senate Report 511, March 20, 1934.

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stricter than the Congressional one. Indians who have left the reservation are excluded from the Act[39].

One problem with the JOM program is that levels of aid are often uneven -- Arizona received $230.00 per pupil while New Mexico received $135.00 in the 1967-68 school year. Furthermore, although JOM funds are intended to deal only with Indian needs, traditionally the funds have been used by school districts to supplement their own general operating budget, thus benefitting all the students[39].

Public Law 81-815 (School Facilities Construction Act), September 23, 1950, provides assistance for the construction of school facilities in districts which experienced an increased enrollment due to the presence of children for whom the federal government has an educational responsibility. Section 14, the section which pertains to Indians, was not funded in 1968-69 because the language of the law gives priority in funding to other sections of the law; in 1968-69 requests of these sections for appropriations were greater than the amount appropriated[39].

Public Law 81-874 (Federally Impacted Areas Act), September 30, 1950, provides funds to local educational agencies for the additional expenses of education caused by increased attendance as a result of Federal Activities. One major problem of P.L. 81-874 has been late funding. The Kayenta, Arizona, School District's budget gets 58 percent of its funds from this Act. Late funding places them in the uncertain position of not knowing whether they might have to reduce their facilities or services in midyear[39].

Public Law 89-10 (Elementary and Secondary Education Act), 1950, provided funds for improving the education of disadvantaged children. Title I (Innovative Progress for Disadvantaged Children), 1966, involved Indians in Federal schools in the Act; in 1969 approximately 9 million dollars was appropriated under Title I specifically for Indians in federal schools. Title VII funded five bilingual projects affecting 773 Indian children ($306,000 out of a $7,500,000 program)[39].

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In 1950 the Federal Long Range Act authorized $25,000,000 for school construction, including provision for dormitories near public schools off the reservation. It was felt that 55 percent of the existing school population would be served by these funds and that population shifts off the reservation would reduce the need for additional facilities. However, the reservation population has instead increased and construction has not met the need(7).

In fiscal year 1967, $84,400,000 was appropriated for educational activities of the BIA and nearly $40,000,000 for the construction of schools and related facilities(82). The BIA spends $18.00 per child per year on texts and supplies; the national average is $40.00 per child per year(39).

Money available for Indian education usually meets only the most basic needs of the "traditional" curricula and is not available for innovative programs or ideas, according to Spang(73).

Teachers and Administrators

Several sources pointed out that there is a shortage of educators who are qualified to teach Indian youth; especially, there is a shortage of educators of Indian descent. In a recent study(12) it was found that only 11 percent of a sample of teachers of Navajo and Papago children had any special training or preparation for dealing with the cross-cultural problems involved in teaching American Indian children, and only 13 percent were Indians. Those with the necessary background often turn away from the challenges of working with poor facilities and deprived students, according to Spang(72). Only one percent of Indian children in elementary schools have Indian teachers or principals. One-fourth of a sample of elementary and secondary teachers by their own admission would prefer not to teach Indian children(18,39).

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In 1968 the BIA surveyed its instructional, administrative, supervisory, and instructional aide personnel. It was found that of nearly 2,900 professional teachers, only 16 percent were of Indian descent; of 433 administrative and supervisory persons, nearly 27 percent were of Indian ancestry; and of 1,600 instructional aides more than 92 percent were Indian[18].

In a study published in 1970, it was found that many of the administrators and teachers of Indian children were not knowledgeable about the Indian child's culture[72]. School board members find it difficult to understand their Indian constituents, and may be unresponsive, even antagonistic, to the Indian people[40].

According to a 1969 report by a special Senate Subcommittee on Indian Education[39], many administrators and teachers consider the Indian students inferior to the white students and thus "demotivate" them. The teachers have a low opinion of the learning potential of their pupils and communicate this feeling in the classroom. The Indian children may often accept the teacher's low evaluation, stop trying, and the low expectation is thus fulfilled.

The ratio of guidance counselors to students in 1969 was reported as approximately 1:600; the ratio of dormitory counselors to students was 1:100. These counselors often lacked professional training. Career and occupational counseling were only rarely offered, and psychological counseling was almost nonexistent, according to the report of a special Senate subcommittee on Indian education[39].

In 1953 the BIA began a crash program to improve education for Navajo children. Between then and 1967, the number of supervisory positions increased 113 percent in BIA headquarters and 144 percent in BIA schools; the number of administrative and clerical positions in BIA schools increased 94 percent. The number of teaching positions, however, increased by only 20 percent[39].

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Curriculum

The typical American school curriculum stresses values that some authors maintain are in direct conflict with those held by Indians -- values such as aggressiveness, competition, individual gain, verbal ability. Retardation is therefore (according to these sources) built into school programs for Indians[39,72]. Also, because the curriculum does not relate to the cultural and home environment of the Indian child, it often has a damaging effect on the child's relationship with his parents[72].

The public schools that educate Indians rarely include course work that recognizes Indian history, culture or language; often they use materials and approaches that are derogatory toward the Indians, are designed to prepare students to live off the reservation, and are geared toward white, middle-class standards and values[39]. The principal of a Chinle, Arizona, public school told an OEO evaluating team that he considered it "not American" to help any "faction" perpetuate its way of life. He thought Rough Rock Demonstration school, with its emphasis on Navajo culture, was a "backward step" and that the country had never moved ahead by "catering" to ethnic groups[39].

In general, the Indian student is not looked upon as college material. If he does attend college he has difficulty in adjusting because of his inadequate educational background[73].

The curriculums used in BIA schools are also generally inappropriate to the experiences and needs of the students. These courses that teach language skills are particularly unsuitable because they do not take into consideration the Indian child's unique language problems[39]. In 1969 the Scott-Foresman readers were required in all BIA schools in Arizona. These readers -- the familiar graded "Dick and Jane" series, depicting an idyllic suburban American life -- were said by many teachers to be not only distasteful but often incomprehensible to Navajo children[12] and detrimental to the development of high motivation. BIA schools emphasize academic courses, and provide only prevocational training courses, which bear little relation to existing job markets[39].

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The BIA school curriculum for Navajo children is not substantially different from the curriculum that is offered to Anglo-American children in urban areas. It is designed to teach the reservation child the life and language of urban America, which is suitable neither for helping him adapt to the Navajo way of life nor for teaching him the Anglo way of life(38).

The BIA has, however, instituted programs which focus on these problems of the Indian educational system. Project TRIBE (Tribal Responsibility in Better Education) is one in which the tribe, under a contract with the BIA, assumes full responsibility for its schools while the federal government provides the funds(21).

A social studies program is being developed by the University of New Mexico for the Navajo area of the BIA. The project includes not only the preparation of Navajo culture-based instructional materials, but also a continuing program of cross-cultural teacher training in social studies(18).

Bilingual kindergartens for 5 year olds have been in operation for the past three years; 6 of the 44 kindergartens follow structured, sequential materials which stress the use of the Navajo language first, and then the English language(22).

Rough Rock Demonstration school on the Navajo reservation has a curriculum offering Navajo and Anglo material on an equal footing. A course of study is being evolved in which Navajo culture, history and language also serve as a means of gradual introduction to English. Navajo parents are involved in curriculum development and other aspects of the education process, and are employed in school dormitories(38).

The literature suggests that Indian children in their native culture may learn ways or styles which are quite different from those of Anglo children in the "dominant" culture, and that if these styles are identified and understood schools can modify instruction in ways that will be helpful to Indian children and will assist in removing their educational disadvantage(18).

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The Teaching of Language

The almost universally acknowledged problem hindering or defeating the Indian student in the Southwest is his language handicap. He is deficient in the basic skills of speaking, listening, reading and writing in English[11]. Two-thirds of the students entering school have little or no skill in the English language; and they are unfamiliar with white society[15].

Most teachers of these Navajo children who are beginning school do not know the Navajo language and thus they do not encourage the children to communicate in Navajo[36]. Erickson's study[26] found that the devaluation of Navajo culture by Anglos was not entirely responsible for the Navajo child's difficulties in school; the "radical structural differences between Navajo and English" were at least equally crucial. A small child entering a school which appears to reject the only words he can use is "adversely affected in every aspect of his being. He is immediately retarded in his school work."[18]

Every language provides a different system of categorizing and interpreting experience. The climate of feeling, reacting and thinking created by the Navajo language is different from that created by English and other Indo-European languages. Navajo is a highly literal language, not given to abstractions and the fluidity of meaning that is characteristic of English. Navajo thought is much more specific and concrete than English thought, and the language is a verb language, whereas English a noun-adjective language. These differences are related to differences in thought patterns of Navajos and Anglos[44]. Thus certain concepts in English cannot be translated directly into Navajo; they require interpretation by someone who understands both cultures as well as both languages. A teacher must assume the role of interpreter in order to communicate educational concepts in English[87].

Materials for teaching English as a second language at Navajo BIA schools have been developed, and forty BIA teachers at each of five Navajo agencies have been taught a seven-week course in linguistic theory

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and methodology for teaching English as a second language to Navajos. Programs in English as a second language are now operating in all schools on the Navajo reservation[18].

It is difficult to tell from the literature exactly what is happening in the field of bilingual education with reference to public schools. However, several Arizona and New Mexico school systems do have programs in English as a second language for Indian children[18].

Participation of the Adult Indian Community in the Educational System

Federal schools operated by the BIA are authorized by federal law and funded by congressional appropriations. Employees of the BIA are federal civil servants and, as such, are possessed of certain rights. Under these conditions, although the Indian community can exercise some influence through advisory school boards, they do not and probably cannot exercise "control" in the ultimate decision-making and "hiring and firing" processes[15]. Despite a 1967 presidential directive, only one of the BIA schools is governed by an elective school board[39]. Thus, even if Indians have been able to express their own ideas about school programs and administration, their participation has been limited[72]. Wax notes that the lack of Indian control of schools results in a conflict of values for the child and sets the home against the school[18].

Public schools enroll at least two-thirds of the Indian children in the country[18]. Indian parents face continuing problems in dealing with the power structure. Many factors explain why Indians are not represented on school boards. The most universal reason is that Indians have been led to believe that they are not eligible to vote or run for office because Indian-owned property is exempt from local property tax. A second factor is that some Indians believe that if they run for office, the federal government will terminate their exemptions. In Arizona most Navajo and Hopi residents are disqualified from voting in public school board elections because they are unable to read and write English. Moreover, the polling stations are near often in the public schools, which are located at great distances from Indian homes[40].

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Both JOM and Title I regulations recommend adult Indian participation in the schools. The BIA requires that districts which receive JOM funds consult the Indian people on all matters related to the education of their children. Yet in most school districts that serve Indian children administrators feel no responsibility or legal obligation to inform Indian parents of federal programs, much less include them in the planning, operation, and appraisal of these programs. Most superintendents who were interviewed in one study frankly admitted that they had not provided parents with any information about JOM or Title I. Indian parents who are keenly interested in education are often alienated from public schools and excluded from decision-making concerning education(40).

As proof that the Indian voice can be effective in the control of schools, however, one can point to the Rough Rock Demonstration School, the Navajo Community College, and the Ramah Experimental High School. Ramah Navajos have recently been successful in establishing control over a high school located in their community because of their concern for their children's educational opportunities. When the Gallup-McKinley County school board closed the public school in Ramah, New Mexico, in 1968, Ramah Navajos were left with no high school for their children. The Ramah Navajo community determined to reopen the school. A privately incorporated school board was elected by the community in February 1970, making Ramah the first Indian community to elect its own school board and assume full responsibility for control of a school(40).

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PART III -- PREPARING INDIAN RURAL YOUTH FOR TODAY'S JOB MARKET

Present Programs

BIA Employment Assistance Programs

The BIA's Employment Assistance Branch consists of the Relocation (Direct Employment) Program, the Adult Vocational Training Program, and the On-the-Job Training Program. The goal of these programs is to make employment opportunities available for those who wish to find jobs for themselves even if they must leave the reservation area to do so[17].

By 1970 the Employment Assistance Branch, begun in 1951, had assisted 53,000 Indians[15]. Generally, those Indians who take advantage of the BIA's On-the-Job Training Program become employed near their homes; those who seek direct employment or institutional training tend to relocate to urban areas. No statistics are available on the number of relocated Indians who have returned to the reservation. Those who receive institutional training and direct job placement are generally under 30; the On-the-Job Training Program tends to attract Indians above the age of 30[29,42,75]. These programs are more fully described below:

Relocation (Direct Employment) Program

Through the Relocation Program, Indians who have a skill for which there is no outlet in the Indian community are moved to areas in which their skills can best be put to use -- in most cases a major urban center -- and are provided direct employment. The program also provides counseling services and monetary grants to pay for the move, to tide the family over until the first paycheck arrives, and to pay for such unexpected needs as dental expenses[17].

Adult Vocational Training Program

Indians who lack skills are eligible to take advantage of the Adult Vocational Training Program. The BIA has contracts with established vocational training institutions to conduct training programs for Indians. The Indian client selects the kind of training program he wants to enter, and he is then sent to one of these vocational institutions. Tuition and supplies are provided, and the BIA defrays living costs during the training program[17].

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On-the-Job Training Program

> Those who enter the BIA's On-the-Job Training Program are usually trained for jobs in the Indian community on the reservation where a new industry is being started, and where employees are being trained to work on assembly lines or in manufacturing plants. The BIA defrays 50 percent of the wages of the trainee until he has completed the training cycle and is regarded as a qualified employee(17).

In 1966 the BIA conducted a follow-up survey[29] of those persons who in 1963 had been enrolled in the Employment Assistance Program. At the time of the survey, 20 percent of the Direct Employment recipients studied were unemployed, in comparison with 6 percent of the on-the-job trainees and 10 percent of the institutional trainees. In comparing average annual earnings prior to and after services, the study showed that all three groups had increases, with the institutional trainees showing the largest increase. The BIA expended, per recipient, $1,104 for those in the Direct Employment Program, $2,550 for those in the Adult Vocational Training Program, and $643.00 for those who received on-the-job training; the study concluded that "there appears to be a direct correlation between the amount expended on a recipient and the amount he [later] earns".

In 1968, the BIA conducted a subsequent follow-up survey[30] of those recipients who had been studied in 1966. It was found that 80 percent of the direct employment recipients, 95 percent of the institutional trainees and 75 percent of the on-the-job trainees were above the poverty level.

Other BIA and Government-Sponsored Programs

The BIA has recently instituted various other programs aimed at meeting the needs of rural and reservation Indians and combating some of their basic problems: namely, poverty and lack of education, job skills, and social orientation. Since 1966, the BIA has contracted with various private industries to establish residential training centers to meet the needs of those who are not prepared for direct employment or vocational training. These programs are designed to equip the Indian with basic

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literacy, math, and communication skills; introduce him to various vocations; and give him social orientation. Counseling is given and, in the case of families, the wife is taught a secondary earning skill. Such centers have the objective of bringing Indians to an entry level of employment and enabling them to function socially, emotionally, and economically in any environment[21].

Some of the more recent programs include counseling services for Indian inmates of federal prisons, correlating their vocational experiences in prison with the training they will receive outside. One program offers a subsidy to aid Indians whose families are too large to subsist on the entry wage for the individual entering employment; as job earnings increase, the subsidy is decreased proportionately until the family becomes self-sufficient.

In an effort to aid the Indian's transition to urban living, the BIA has established special orientation centers in Seattle and Oakland which serve as "halfway houses" for Indians who are relocating away from their traditional home area[29]. To enhance the prospect of long-term success for families who have completed training and entered employment, the BIA will provide a grant that enables families who intend to become permanent residents in their chosen communities to purchase a home[17].

The Economic Opportunity Act (EOA) of 1965 attempted to encourage local initiative through direct grants to Indian groups, permitting them to initiate programs and organize their operational structure. The Act provided for numerous programs, including Head Start, Upward Bound, Job Corps, Vista, and Community Action Programs[15,18,39]. Through the Office of Economic Opportunity (OEO), training and employment opportunities are provided for Indians under such programs as the Neighborhood Youth Corps (NYC); Title V, Work Experience; Migrant and Agricultural Placement; and Household Aide and Improvement Training[74].

The Manpower Development and Training Act (MDTA) provides job skill development for Indians. A few of the MDTA programs that have been established on Indian reservations are for sawmill operators, sheep shearers,

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electronics technicians, house builders, waitresses, clerk-stenographers, coil winders and solderers. In addition to these institutionalized programs, there are forty to fifty apprenticeable crafts available to Indians on the Navajo Reservation, including an innovative training program that is designed to prepare Navajo and other Indian youth for apprenticeship training in the construction trades(6,21).

Efforts to improve manpower services to Indians include the Human Resources Development (HRD) Program, which uses the traditional structure of the Employment Services of New Mexico to help make Indians more employable and to provide employment opportunities for Indians. The program attempts to keep Indians notified of job availability and training opportunities(21).

The Arizona State Employment Service has set up special offices on several reservations to provide such services as job placement, counseling, testing, labor market information, and manpower training(48). On the Navajo reservation, the Navajo Concentrated Employment Program (CEP) provides job recruitment and job development with the goal of reducing unemployment and underemployment of reservation residents. An important aspect of this program is that all staff members are Navajos(48). Another program attempts to create both economic development and jobs on Indian lands. The Indian Development District of Arizona (IDDA), which is jointly sponsored by the Indian tribes of Arizona, sponsors NYC, Operation Mainstream, on-the-job training programs, and a vocational training center for Indian boys. It also operates its own business ventures to generate self-supporting revenue(48).

Post-High School Educational Programs

Recently, several programs have been established to aid the Indian student who wants to obtain post-high school education and training. For example, Fort Lewis College in Durango, Colorado, offers a summer precollege intercultural program that provides intensive study of English for bilingual students, a tutorial program, guidance and counseling, and an intensive math program. About 95 percent of the participating students are Indian, and the college reports a reduction in the Indian dropout rate since the program's inception(49).

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Arizona State University has special curricula for teachers and administrators who will be working with Indian students[38]. The University of New Mexico has a special program for Indians who are studying law. It is also conducting a study under the sponsorship of the Ford Foundation to identify causes of academic failure of American Indians and to provide a remedial program for Indian freshmen at the University[23,39].

At present, the Navajo Community College in Many Farms, Arizona, is the only college on an Indian reservation that was established by Indians and is operated by Indians primarily for Indian students. It offers a variety of courses that lead to an Associate of Arts Degree. A vocational-technical program and precollege courses are also offered[4].

For those students who are interested in specialized occupational training, Southwestern Polytechnic Institute at Albuquerque, New Mexico, offers an employment-oriented, post-secondary program that trains students for existing jobs and provides them with the necessary skills for those jobs. It is expected that 200 Navajo youth will utilize this facility in 1972. Credits will be accepted for college degree programs. Indians have been involved in every stage of this school's planning and growth[4,19].

For Indians who are seeking employment and advancement in federal, state, and tribal jobs, the National Indian Training Center in Brigham City, Utah, provides an in-service and preparatory training program that emphasizes training for management positions. The center has an expected enrollment of 500 annually[19].

Edington[21] believes that, in general, college and two-year terminal programs have not been very satisfactory in preparing Indian students for skilled jobs. This perhaps is because the programs require that the students take too many "extra" subjects, such as English, geology, and history, and not enough basic laboratory or shop work. There are twenty-two universities and branch colleges in the Western that offer to teach skills in occupational areas. According to Edington, these schools

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cannot provide the latest sophisticated equipment necessary to fully train skilled workers; it would be more effective to have fewer of these schools and provide them with better, more modern equipment.

Indian students who desire additional training beyond high school often face great difficulty in obtaining financial assistance. Over 4000 Navajo young people have been assisted in their post-high school training by the Navajo Tribal Fund; however, out of 1,500 high school graduates in 1968, only 200 received college assistance grants from the tribal fund. The remaining 300 of the 500 available grants were renewals of grants to students already in college. The BIA Employment Assistance Program provides grants for 200 additional students each year. But 400 grants for 1,500 graduates is not nearly enough to fill the need(21).

Amendments made to the Vocational Education Act may be directly applicable to the educationally disadvantaged American Indian population because those people who have special educational handicaps will receive special attention. Federal funding may be approved for research and training, exemplary programs, residential schools, cooperative vocational education, home economics, and work-study programs(21).

Suggested Programs

Often in the past government programs have been set up by administrators who failed to understand that Indian psychological processes and assumptions differ from those of the white man. A major factor in the failure of past rehabilitation services is that most were structured for and tailored to urban, Anglo oriented groups(44,61). Any program that is aimed at helping a person adjust to another culture successfully must take these cultural differences into account; a wide variety of learning experiences must be integrated into one program that will help the individual participate in his new setting, and yet be in harmony with the individual's personality needs and his direction for development(61). Many writers(11, 12,19,37) suggest that if programs aimed at helping the Indians are to be successful, the Indians themselves must have an effective voice in determining their own needs, formulating policies, administering funds, and controlling the management of the programs.

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Many authors[9,11,12,18,57] agree that the school curriculum should be revised and that a bicultural approach should be used in Indian education. Bilingual kindergarten programs should be provided as well as bilingual instruction of English for older children; Indian cultural materials, such as the Rough Rock school's graded series of readers based on Navajo culture, ought to be included in the instruction program. A need has been identified for intensive instruction throughout the grades in developmental reading, writing and study skills as well as better academic preparation and orientation for college-bound students, with more intensive counselling and tutoring after college enrollment.

Special training is needed for all teachers and counselors of Indian children. Teachers and administrators must have an understanding of and a respect for Indian culture. Some sources have maintained also that, preferably, they should be of Indian descent[11,12,18,21]. School officials must, according to several writers, make a concerted effort to establish communication with adults through hogan visits, and the workings of Anglo education must be presented to non-English speaking Indians in honest, understandable terms[11,12,18,57].

Others have expressed a need for more adequate funding of educational programs for Indians. One suggestion was that a comprehensive Indian education act be established to meet the educational needs of both public and federal schools[18]. The reservation school system itself needs development -- new schools should be built, road improvements made, better transportation developed, trailer schools reopened on the reservation as community schools -- so that as many children as possible can be moved out of boarding schools and placed in community schools on the reservation[12,57,82].

It was suggested that vocational education should be an integral part of any BIA or public school system that enrolls large numbers of Indians. Indian students need more information about educational opportunities and possible careers; more counselors are needed to make such information available[9,18].

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Another recommendation was that planning for vocational and technical education programs for the American Indian take place on the regional, state, and local levels in cooperation with Indian people. Vocational education programs at the state level (in cooperation with federal funding agencies such as BIA and MDTA) should, according to Edington, sponsor and operate job skill centers for undereducated and underemployed adult Indians. The centers would offer counseling, basic and remedial education, skill training, and job placement as well as retrain those persons whose job skills have become obsolete[21]. Specific programs might also be developed either for training the Indian or for recruiting the Indian into existing programs in vocational education. More adequate methods of selection for training and employment might be developed in selecting American Indians. Such training would recognize the cultural differences as well as the occupational needs of the Indian people. Training and employment opportunities might be developed in many areas, not only in industry, but also in agriculture, in recreation and services, and in business[18,21].

Industry, according to Edington, should become more involved in vocational education by providing in-house training programs at the ability level of the American Indian, by making certain that management and supervisory positions are available to Indian people, by establishing good communications and relations with representatives of labor to create more opportunities for the Indian, and by determining that requirements for entry-level jobs are realistic with what is actually needed to perform the operation of such jobs[21]. Coombs states that more on-the-job training and direct contact with industry should be available, including city living and budgeting experiences, as well as adequate financial resources to provide clothing and other basic needs during the training[18].

APPENDIX A

THE GEOGRAPHICAL CONTEXTS: ARIZONA AND NEW MEXICO

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Twenty-seven percent of the land in Arizona is occupied by 19 Indian reservations. The Navajo reservation occupies over 15,000,000 acres, mainly in northeastern Arizona; however, a sizable portion extends into northwestern New Mexico. An additional 3,500,000 acres are occupied by Navajos living off the reservation on individually owned allotments, leased lands, railroad land, and public domain land. However, the terrain does not favor the survival of large numbers of people whose technology is limited and who remain isolated from the main arteries of commerce. There are too many people for the resources; the number of Navajos increases steadily and the land grows steadily less productive. One source estimates that the Navajo reservation can support no more than 35,000 people at a decent subsistence level[7,16,44].

All Navajo land is part of the rocky Colorado Plateau. In general, flowing water is scarce and the land is not suited to agriculture. There are mineral resources here, however -- coal, oil, helium, vanadium, and several other minerals. Timber is also an important resource.

There are four types of topography: flat alluvial valleys (San Juan River and Chinle Wash), broad upland plains, rugged tablelands, and mountains. Variations in climate are more closely related to altitude than to geographical position. At lower elevations (nearly half of the total reservation acreage) a warm, arid "desert" climate prevails. Desert vegetation is sparse and easily injured by overgrazing; soil erosion is a major problem. The middle elevations (two-fifths of the total acreage) are characterized by a "steppe" climate. Steppe vegetation produces more forage than desert vegetation, but it cannot be safely overgrazed. Land at these middle elevations is more stable than desert soil, but it also is subject to erosion. The remainder of the reservation is mountainous, with a cold, subhumid climate. The growing season is only about 90 days long, and killing frosts have been known to occur in every month of the year. The soil at this elevation is more stable than the soil at any other elevation and produces good forage; it can be used, however, only during the summer. This area of the reservation contains an extensive belt of valuable evergreen forests[44,66].

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The main Papago reservation, a total of 2,770,436 acres, occupies a large part of the southern half of Pima County and a corner each of Pinal and Maricopa Counties. Two outlying reservations, one at San Xavier near Tucson and one near Gila Bend, comprise 81,294 acres. As is the case on the Navajo reservation, limited resources support the population inadequately[43].

The Papago reservation is located in the Sonora Desert. Topographically it lies within the basin and range province, which is characterized by numerous small mountain ranges separated from each other by broad, alluviated areas of extremely slight relief. The Baboquivari Mountains lie along the eastern border of the main reservation. This is the area of highest elevation[57,76] and contains the best grassland. The elevation of the rest of the area reanges from 1,500 to 2,500 feet. Mineral resources are scarce, except for workable copper deposits close to the San Xavier Reservation. Precipitation is scarce and potential evaporation is ten times greater than potential rainfall. Although the soil on the valley floors is suitable for agriculture where water is available, water must come from deep wells. Water for irrigation is limited by the lack of ground water at a depth that permits pumping at costs sufficiently low for agricultural purposes. Severe soil erosion is present in nearly all parts of the reservation; the moderate or slight erosion areas are concentrated in the central, southeastern and extreme northwestern parts of the reservation[43,57].

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APPENDIX B

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